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United States Patent [19][11] **Patent Number:** **5,113,666****Parrish et al.**[45] **Date of Patent:** **May 19, 1992****[54] COOLING DEVICE FOR HAZARDOUS MATERIALS SUITS****[75] Inventors:** Clyde F. Parrish, Melbourne; Robert P. Scaringe, Rockledge, both of Fla.**[73] Assignee:** Mainstream Engineering Corp., Rockledge, Fla.**[21] Appl. No.:** 593,044**[22] Filed:** Oct. 5, 1990**[51] Int. Cl.⁵** F25D 23/12**[52] U.S. Cl.** 62/259.3; 62/477; 55/269; 55/316**[58] Field of Search** 62/259.3, 261, 235.1, 62/477; 604/312, 311; 2/81, 7, 84, 87, 2; 55/269, 316**[56] References Cited****U.S. PATENT DOCUMENTS**3,802,215 4/1974 Rowe 62/259.3
4,138,850 2/1979 Tchernev 62/335.1*Primary Examiner*—Albert J. Makay*Assistant Examiner*—John Sollecito*Attorney, Agent, or Firm*—Evenson, Wands, Edwards, Lenahan & McKeown**[57] ABSTRACT**

A relatively lightweight cooling device utilizing adsorption of perspired water vapor to permit evaporative cooling of a person wearing a sealed suit for defined time periods. The device can be constructed in the form of a rectangular pad or the like having an open cell foam adjacent the person's skin to permit static transport of perspired water vapor to an adsorbent layer. The open cell foam or a separate material acts as a thermal insulator to prevent heat flow back toward the skin resulting from the exothermic heat of adsorption produced by the adsorbent layer. In lieu of static movement of the water vapor, a small fan can be operatively associated with the fan for actively moving the water vapor to a single point to enhance the evaporative cooling, particularly where a smaller amount of adsorbent material is used. The vest itself can be the evaporator and filled with working fluid which is vaporized as the evaporator section of the vest absorbs heat from the body. The vapor is transported to a bed which can contain a desiccant, molecular sieve, adsorbent or absorbent material.

22 Claims, 3 Drawing Sheets